

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
	<p>LESSON PLAN</p> <p>INTRODUCTION</p> <p>A. Course Title: Hazardous Materials – Level 1: Awareness</p> <p>Instructional Goals:</p> <ol style="list-style-type: none"> 1. To provide students with training that complies with Federal, State, and local standards and procedures for Level I Hazardous Materials response 2. To ensure students are aware of their responsibilities for Hazardous Materials Incidents <p>Instructional Objectives:</p> <p>Upon completion of this course, the participants will be able to:</p> <ol style="list-style-type: none"> 1. Analyze an incident to determine if hazardous materials are present 2. Identify basic hazards of hazardous materials involved in an incident 3. Identify potential outcomes at a hazardous material incident 4. Identify response and hazard information for hazardous materials according to current reference material, including a current Emergency Response Guidebook 5. Identify proper protective actions consistent with local and State requirements and current ERG information 6. Identify proper notification procedures consistent with local and State plans 7. Recognize components of the NIIMS Incident Command System 8. Identify the need for a structured Incident Command system

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
	<ol style="list-style-type: none"> 9. Identify types of locations that may become targets for criminal or terrorist activity using hazardous materials 10. Identify at least four (4) indicators of possible criminal or terrorist activity involving hazardous materials 11. Identify the specific actions necessary when an incident is suspected to involve criminal or terrorist activity 12. Identify the purpose of Material Safety Data Sheets 13. Identify the information contained in shipping papers and container markings that will assist emergency responders in identifying the hazardous material, including: <ol style="list-style-type: none"> a. proper shipping name b. 4-digit identification number c. hazard class d. reportable quantity e. tank car commodity identification 14. Identify the primary purpose of the DOT Emergency Response Guidebook 15. Identify the organization of the DOT Emergency Response Guidebook 16. Identify the purpose and use of the numerical and alphabetical indices and the table of placards in the DOT Emergency Response Guidebook 17. Identify when to use the DOT Emergency Response Guidebook recommendations for incident isolation and evacuation 18. Identify the emergency action guides to be used when the hazardous material cannot be identified

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
	<ol style="list-style-type: none"> 19. Demonstrate how to locate the correct DOT emergency action guide using: <ol style="list-style-type: none"> a. 4-digit identification number b. hazard class name c. container markings d. placards e. UN Identification number f. shipping papers 20. Demonstrate how to select the correct isolation and evacuation distance for the Table of Isolation and Evacuation distances 21. Demonstrate how to locate the guideline for initial action when the material is not known and cannot be identified 22. Identify the initial guidelines for isolation and evacuation of the hazard area 23. Identify what are the common ignition sources found at hazardous material incident scenes 24. Identify what are the routes of toxic exposure to emergency responders: <ol style="list-style-type: none"> 24.1.inhalation 24.2.injection 24.3.ingestion 24.4.absorption <p>Instructional Methods:</p> <ol style="list-style-type: none"> 24.4.1.1. Lecture 24.4.1.2. Group Activities 24.4.1.3. Written final exam to test knowledge base. 70% or higher required to pass

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
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OH
3

Handouts:

- 4.4.1.3.1.1.1. Student Manuals
- 4.4.1.3.1.1.2. DOT Emergency Response Guidebook
- 4.4.1.3.1.1.3. DOT Chart 11

Estimated Time: 8 hours

Bibliography and Resources:

1. OSHA C.F.R. 1910.120
2. NFPA 472
3. New Mexico State Hazardous Materials Emergency Response Plan
4. DOT Emergency Response Guidebook, 2000 Edition

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4-5

Instructor: _____ Presentation Date: _____

Prepared by: _____ Date: _____

Approved by: _____ Date: _____

Revised: _____

I. ADMINISTRATIVE DUTIES

- A. Roster Review**
- B. Registration**

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
OH 6	C. Attendance Requirements
	<ol style="list-style-type: none"> 1. Cannot miss more than 1 hour of class 2. Must be involved in all student activities
	D. Testing Policy
	<ol style="list-style-type: none"> 1. One retest allowed 2. Must retest within 1 year 3. If retest failed, must attend whole course again 4. Basic, Cert.-by-Waiver, and Satellite Academies will follow their retest requirements
OH 7	
OH 8	E. Breaks, lunch, etc.
OH 9	II. COURSE OVERVIEW
	A. Definitions
	B. Identification
	C. Scene Hazards
	D. Terrorism
	E. Emergency Response Guidebook
	F. Notification
	G. Isolating the Scene / Protecting the Public
	H. National Interagency Incident Management System (NIIMS) Incident Command System
	I. Exercise
	J. Exam
OH- 10	III. DEFINITIONS / BACKGROUND
	A. Hazardous Material
	<ol style="list-style-type: none"> 1. A substance or material which has been determined

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
	<p>by the U.S. Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property, when in commerce – U.S. Dept. of Transportation</p>
<p>LO-5</p>	<p>2. Any substance that can produce an adverse effect on the health or safety of the persons exposed – EPA / OSHA</p>
<p>LO-5</p>	<p>B. Hazardous Materials First Responder</p> <p>1. An individual who may witness or discover a chemical release</p>
<p>LO-5</p>	<p>b) law enforcement c) fire personnel d) EMS personnel e) highway department f) security guards g) city / county maintenance workers h) etc.</p>
<p>LO-4</p>	<p>C. 29 CFR OSHA 1910.120</p> <p>1. Outlines training levels for hazardous materials incidents</p>
<p>LO-4</p>	<p>2. Established because of past incidents involving injuries caused by lack of training or protective equipment</p>
<p>LO-4</p>	<p>3. This course emphasizes requirements for Awareness level training</p> <p>D. Established Training Levels</p> <p>1. First Responder – Awareness 2. First Responder – Operations 3. Technician 4. Specialist 5. Incident Commander</p>

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
LO-1 <div data-bbox="305 285 399 363">OH 17</div>	E. Awareness Level Requirements <ol style="list-style-type: none"> 1. Recognize a hazardous materials incident exists 2. Identify materials / hazards to best of their abilities 3. Initiate proper Notification procedures 4. Initiate proper Isolation / Protection actions
LO-2 LO-3 <div data-bbox="305 554 399 632">OH 18-19</div>	IV. PLANNING / PREPAREDNESS / SAFETY <p>A. Standard Operating Procedures</p> <ol style="list-style-type: none"> 1. Individual agencies required to have 2. Must deals specifically with the type of hazardous material incidents their jurisdiction may encounter <p>B. Written Emergency Response Plans</p> <ol style="list-style-type: none"> 1. Individual agencies must have 2. Employees should know his/her responsibilities in notification and response actions from the plan 3. Employees should know where plans are located
<div data-bbox="305 1050 399 1127">OH 20</div>	<p>C. State of New Mexico Hazardous Materials Emergency Response (HMER) Plan</p> <ol style="list-style-type: none"> 1. Establishes response criteria for State and local response 2. 3 levels of incident identified 3. Awareness trained person must notify State Police upon discovering a hazardous materials incident. 4. Operations trained person can decide to handle, if meets criteria of Level 1 incident
<div data-bbox="305 1430 399 1507">OH 21</div>	<p>Film – “Gore Oklahoma”</p>
LO-6	V. HAZARDOUS MATERIALS INCIDENT? <p>A. A Hazardous Material Is Present</p>

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<p>LO-4</p>	<p>B. Has Left Container or</p> <p>C. Has Potential To Leave Its Container</p> <p><i>Discussion Activity #1: Recognition</i></p> <p>Instructor is to discuss with students how they would approach the scenes depicted in the pictures shown. Instructor is to see if students think that incidents shown may be hazardous materials incidents and why. Discuss with students other points such as identifying the product by just what they see and if they believe someone would have to be contacted about the incident. Also, see if they feel isolation and or other protective measures may be needed.</p> <p>VI. WHY IS HAZARDOUS MATERIALS INCIDENTS DIFFERENT?</p> <p>A. Incident is far reaching</p> <p>B. There is a greater potential for harm at hazardous materials incidents</p> <p>C. Hazardous materials incidents require specialized training and equipment</p> <p>VII. IDENTIFICATION</p> <p>A. Proper Identification Is Crucial For Effective Mitigation</p> <ol style="list-style-type: none"> 1. First Responder plays vital role 2. First Responder should know how to use available resources to help in identification of material and it's hazards <p>B. Overview Of Clues</p> <ol style="list-style-type: none"> 1. Occupancy / Location 2. Markings and colors 3. Container shapes 4. Placards and labels 5. Hazard Classes

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<div data-bbox="305 552 401 632">OH 34</div> <div data-bbox="305 1066 401 1146">OH 35</div> <div data-bbox="305 1392 401 1472">OH 36</div>	<div data-bbox="667 237 841 384"> 6. Papers 7. Senses 8. People </div> <div data-bbox="548 403 998 441"> C. Occupancy / Location </div> <div data-bbox="667 459 1487 770"> 1. Type and location of occupancy can indicate not only potential presence of hazardous materials, but can give clues to type of hazardous materials there are 2. Knowing where a shipment came from or is going to may help in identifying the type and/or kind of hazardous material being shipped </div> <div data-bbox="418 840 1432 930"> <p><i>DISCUSSION ACTIVITY #2: What chemicals may be found at these locations?</i></p> </div> <div data-bbox="548 1005 987 1043"> D. Markings And Colors </div> <div data-bbox="667 1062 1421 1921"> 1. Can give responders information of the type and hazard of a material 2. Rail Car Stencils <ul style="list-style-type: none"> a) follow DOT specifications b) may identify product (dedicated car) c) indicate rail car owner d) emergency phone numbers e) tank test pressure 3. NFPA 704 <ul style="list-style-type: none"> a) used to mark <i>fixed facilities</i> b) represents <i>basic emergency</i> information c) Blue section – health hazards d) Red section – flammability hazards e) Yellow section – reactivity hazards f) White section – special considerations g) numbers range from 0 – 4, with 0 being least </div>

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<div data-bbox="167 772 251 800" data-label="Text">LO-13</div> <div data-bbox="305 344 401 420" data-label="Text">OH 37</div> <div data-bbox="305 554 401 630" data-label="Text">OH 38</div> <div data-bbox="305 724 401 800" data-label="Text">OH 39</div> <div data-bbox="305 840 401 915" data-label="Text">OH 40</div>	<div data-bbox="787 237 1263 275" data-label="Text">hazard to 4 being greatest hazard</div> <div data-bbox="738 294 1218 331" data-label="Text">h) <i>not enforced by all agencies</i></div> <div data-bbox="667 348 979 386" data-label="Section-Header">4. Military markings</div> <div data-bbox="738 405 1466 825" data-label="List-Group"> <ul style="list-style-type: none"> a) used at military fixed sites or facilities b) identify fire and explosion hazards c) follows DOT explosive hazard class division breakdown d) additional warnings for chemical hazards (high toxic, harassing agents, white phosphorous munitions), not to use water, and to wear protective breathing apparatus </div> <div data-bbox="667 842 979 879" data-label="Section-Header">5. Pipeline markers</div> <div data-bbox="738 898 1214 1152" data-label="List-Group"> <ul style="list-style-type: none"> a) located adjacent to pipelines b) product information c) pipeline ownership d) phone numbers e) signal word </div> <div data-bbox="667 1171 943 1207" data-label="Section-Header">6. Product labels</div> <div data-bbox="738 1226 1490 1755" data-label="List-Group"> <ul style="list-style-type: none"> a) precautionary statement – “keep out of reach of children” b) active ingredients – important information to provide to hospitals / poison control centers for treatment of victims c) hazard statement – indicates if product presents an environmental hazard (including those to water supplies) d) signal word – indicates different levels of exposure – Danger, Warning, Caution </div> <div data-bbox="548 1774 977 1810" data-label="Section-Header">E. Placards and Labels</div> <div data-bbox="667 1829 1510 1919" data-label="List-Group"> <ul style="list-style-type: none"> 1. Used to identify worst hazards of materials in transport 2. Color, symbol, and numbers can give clue to what </div>

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
OH 41	<p>hazard or hazard class the material is</p> <ol style="list-style-type: none"> 3. Placards must be on all 4 sides of a container 4. Labels are placed on at least 2 sides of package and more than one label can be used at a time 5. MAY NOT BE REQUIRED – 1001 lb. weight limit on majority of materials
OH 42	<p>F. UN Hazard Classes – 9 Classes</p> <ol style="list-style-type: none"> 1. Class 1: Explosives – rapid release of gas and heat <ol style="list-style-type: none"> a) 1.1 – mass detonating: dynamite, black powder b) 1.2 – mass detonating with fragments: aerial flares, detonating cord c) 1.3 – fire hazard with minor blast or projectile hazard: special fireworks, propellant explosives, liquid fueled rocket motors d) 1.4 – substances that presents no significant hazard: common fireworks, small arms munition e) 1.5 – very insensitive explosives: ammonium nitrate / fuel oil mixture f) 1.6 – extremely insensitive explosives 2. Class 2: Gases – under pressure may rupture (fire or non-fire) – may be flammable, poisonous, asphyxiant, corrosive, and/or an oxidizer <ol style="list-style-type: none"> a) 2.1 – flammable gases: propane, acetylene b) 2.2 – non-flammable gases: carbon dioxide, anhydrous ammonia c) 2.3 – poisonous gases: chlorine, phosgene,
OH 43	
OH 44	<ol style="list-style-type: none"> 3. Class 3: Flammable / Combustible liquids <ol style="list-style-type: none"> a) flammable liquids have a flashpoint less than 140 degrees F.

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<p>LO-13</p> <p>OH 45</p> <p>OH 46</p> <p>LO-14</p> <p>OH 47</p>	<p>b) combustible liquids have a flashpoint at or above 140 degrees F.</p> <p>4. Flammable Solids – may react with water or require special extinguishing agents</p> <p>a) 4.1 – flammable solids: magnesium, phosphorous, molten sulfur, wetted explosives, self-reactive materials, readily combustible solids</p> <p>b) 4.2 – spontaneously combustible / pyrophoric materials – ignite or self-heat when in contact with air: charcoal briquettes, aluminum alkyls</p> <p>c) 4.3 – dangerous when wet – spontaneously flammable or give off gases when in contact with water: potassium, metallic sodium</p> <p>5. Class 5: Oxidizers – supplies oxygen which supports combustion – sensitive to heat, shock, friction, and/or contamination</p> <p>a) 5.1 – oxidizers: ammonium nitrate fertilizer</p> <p>b) 5.2 – organic peroxides: benzoyl peroxide, peracetic acid</p> <p>6. Class 6: Poisons – toxic by inhalation, ingestion, absorption, possibly flammable</p> <p>a) 6.1 – poisons: carbon tetrachloride</p> <p>b) 6.2 – infectious substances: medical waste, anthrax, rabies</p> <p>7. Class 7: Radioactive – biological effects or burns</p> <p>a) Alpha radiation – particles – have mass: normally will not penetrate through outer clothing</p> <p>b) Beta radiation – particles – have smaller mass than Alpha: will not normally penetrate deeper than first or second layer of skin</p>

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<p>LO-12</p> <div data-bbox="305 285 401 363">OH 48</div> <div data-bbox="305 1010 401 1087">OH 49</div> <div data-bbox="305 1430 401 1507">OH 50</div>	<ul style="list-style-type: none"> c) Gamma radiation – energy waves – no mass: penetrates through almost anything (only protection is time, distance, shielding 8. Class 8: Corrosives – acids or bases – may be water reactive – will cause tissue destruction – may be fuming: hydrochloric acid, sulfuric acid, nitric acid, soda ash (base) 9. Class 9: Miscellaneous – presents a hazard during shipment: bleaching powder, PCB's 10. ORM-D: limited hazard during transport due to it's form, quantity, and packaging: small arms ammunition <p>G. Shipping Papers – provide information on hazardous materials being shipped</p> <ul style="list-style-type: none"> 1. Names of papers <ul style="list-style-type: none"> a) highway transportation – bill of lading b) rail transportation – waybill or consist c) air transportation – air bill d) water transportation – shipping paper 2. Information required <ul style="list-style-type: none"> a) shipping name (as material would appear in ERG) b) UN Hazard Class and number c) UN ID number (4-digit) d) quantity e) shipper's name and address f) emergency contact phone number(s) <p>H. Material Safety Data Sheets (MSDS) – provide information that could indicate the presence of hazardous materials –</p>

OUTLINE AND PRESENTATION

information required is regulated, but order of placement is not

1. Information included on MSDS
 - a) manufacturer name and location
 - b) material name and chemical family
 - c) hazardous ingredients
 - d) physical data
 - e) fire and explosion hazards
 - f) spill or leak information
 - g) health hazards
 - h) special handling precautions
2. Location
 - a) in shipment, will be included with the shipment
 - b) at facility, may be near material and/or a copy may be with security or administrative personnel
 - c) should be included with the facility's emergency response plan
 - d) obtain copy during any preplanning to help with your response plan

OH
51

I. Senses

1. Sight
 - a) vapor cloud
 - b) fire
 - c) visible chain reaction
 - d) pools of liquid
 - e) victims on ground or sick
2. Hearing
 - a) hissing sound of gas being released under

OH
52

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<p>LO-1</p> <div data-bbox="305 304 401 382">OH 53</div> <div data-bbox="305 1010 401 1087">OH 54</div> <div data-bbox="305 1276 401 1354">OH 55</div>	<p>pressure</p> <p>b) flow of liquid</p> <ol style="list-style-type: none"> 3. Taste – don't use 4. Touch – don't use 5. Smell – don't use <p>J. People</p> <ol style="list-style-type: none"> 1. Drivers 2. Witnesses 3. Facility employees 4. Victims 5. Other responders <p><i>Students need to be careful of approaching people involved with any hazardous materials incident. There is always a possibility of contamination from anyone already on scene. Be sure to verify any information obtained by other people, if possible.</i></p> <p>Student Activity #1: Gathering Information</p> <p>Have students turn to page in their student manuals and answer question by using reference material (i.e.; shipping paper, msds, and label).</p> <p>K. Container Shapes</p> <ol style="list-style-type: none"> 1. Can indicate types of materials being transported

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
OH 56	<ul style="list-style-type: none"> a) not every container designed specifically to handle hazardous materials b) always possibility any container can be carrying a hazardous material
OH 57	<ul style="list-style-type: none"> 2. Should be able to determine if material is: <ul style="list-style-type: none"> a) solid b) liquid c) gas 3. Will assist in determining Isolation / Protective action distances if the material is released from its container
OH 58	<p>L. Highway Containers</p> <ul style="list-style-type: none"> 1. Box trailers <ul style="list-style-type: none"> a) most common container b) can contain any hazard class or material c) contents not visible d) usually only one access 2. Dry Bulk <ul style="list-style-type: none"> a) carries solids: dusts, powders, pellets b) carries corrosives, oxidizers, or non-hazardous materials in dry form c) “V” or “W” shaped bottom d) may have air compressor unit for off-loading product which may be mounted on front or rear of trailer
OH 59	<ul style="list-style-type: none"> 3. WIPP TRUPACT II <ul style="list-style-type: none"> a) specially designed to transport radioactive waste

OH
60

- b) primary hazard is particulate radiation
- c) should be handled same as any other hazardous material incident

M. Tank Trailers

1. Classified by pressure
2. Designed (and regulated) to carry hazardous materials
3. Type of material determines type of tank trailer used
 - a) MC-306 / DOT 406 (non-pressure)
 - less than 3 psi
 - carries low volatility **liquids**: gasoline, diesel, fuel oil, Class B Poisons
 - liquids under ambient temperature and pressure
 - multiple compartments / products inside tank
 - oval cross section
 - carries up to 8,000 gallons
 - DOT-406 constructed of aluminum – designed to melt away if container involved in fire which helps alleviate problem of possible BLEVE
 - b) MC-307 / DOT-407 (low pressure)
 - up to 25 psi
 - carries high volatility **liquids** or mild corrosives: asphalt, sulfuric acid
 - round cross section or horseshoe shaped cross section (insulated for hot or cold)
 - carries up to 7,000 gallons
 - c) MC-312 / DOT-412 (low pressure)
 - corrosive tanker – strong corrosives (acids or

OH
61

OH
62

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<div data-bbox="284 323 401 401">OH 63</div> <div data-bbox="284 665 401 743">OH 64</div> <div data-bbox="284 1008 401 1085">OH 65</div> <div data-bbox="284 1239 401 1316">OH 66-67</div>	<p>bases)</p> <ul style="list-style-type: none"> • up to 25 psi • round cross section with exterior supporting rings • smaller in diameter than 406 or 407 • tank sits inside wheel base of trailer • carries up to 6,000 gallons (heavier liquids than carried by 406 or 407) • overturn and splash protection located around valve locations <p>d) MC-331 (high pressure)</p> <ul style="list-style-type: none"> • 100 to 250 psi • liquefied compressed gases: propane, butane, anhydrous ammonia • gas under ambient temperature • BLEVE potential if tank involved in fire • round ends (hemispherical) • carries from 2,500 to 11,500 gallons • large expansion ratio: propane = 270:1 <p>e) MC-338 (cryogenic)</p> <ul style="list-style-type: none"> • refrigerated liquids (-150 to -450 degrees F.): liquid oxygen, liquid nitrogen • low pressure – under 25 psi • huge expansion ratio of 800:1 • well insulated “thermos bottle” • vapor will often discharge because of normal activation of pressure-relief valve <p>f) tube trailers (ultra-high pressure)</p> <ul style="list-style-type: none"> • 2,000 to 5,000 psi

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
OH 68-69	<ul style="list-style-type: none"> • compressed gases: oxygen, nitrogen, hydrogen • same gases as carried in cryogenic trailer, but in a “true gaseous” form • stacked cylinders
OH 70-71	<p>N. Rail – similar in shape to highway containers: box, flat, bulk, tank, etc.</p> <ol style="list-style-type: none"> 1. Intermodal – containers from other modes of transportation being transported by rail 2. All rail containers do not necessarily carry hazardous materials 3. Hopper Car <ol style="list-style-type: none"> a) same considerations as highway dry bulk container
OH 72-73	<ol style="list-style-type: none"> 4. Rail tank cars – classified by pressure <ol style="list-style-type: none"> a) non-pressure cars <ul style="list-style-type: none"> • valve assemblies on top of car are not covered • valve assemblies underneath car may also be present for off-loading • do not always transport hazardous materials • carry liquids or solids that can be liquefied: flammable liquids, corrosives, poisons, molten sulfur • carries 4,000 to 45,000 gallons • less than 100 psi b) pressure cars <ul style="list-style-type: none"> • valve assembly covered with “bonnet” or “dome”

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
OH 74-75	<ul style="list-style-type: none"> • designed to transport hazardous materials • regulated by DOT • carry liquefied compressed gases: propane, butane, some Class A Poison gases • 100 to 600 psi • 4,000 to 45,000 gallons • may be jacketed <p>c) cryogenic rail cars</p> <ul style="list-style-type: none"> • low pressure (below 25 psi) • “thermos bottle” • product at –150 degrees F. or lower • absence of top fittings on most cars • carries liquid oxygen, liquid nitrogen, etc.
OH 76	<p>d) intermodal containers</p> <ul style="list-style-type: none"> • can involve more than one form of transportation: air, sea, land • can carry any type of hazardous materials or non-hazardous materials: box trailer on flatcar, container on flatcar, tanks of flatcar • 14.5 to 100 psi maximum allowable working pressure • possible flashpoint between 32 to 140 degrees F. • examples: alcohol, corrosives, pesticides, solvents, toxins, flammables, cryogenics <p>O. Pipelines</p> <ol style="list-style-type: none"> 1. Located above or below ground 2. Low or high pressure 3. Various products can run through the same line

OUTLINE AND PRESENTATION

4. Multiple lines often buried together
5. Different pipeline companies often located together
6. Will have markings
 - a) indicate line ownership
 - b) show type of product(s)
 - c) warning label
 - d) emergency / non-emergency phone numbers

P. Fixed Facility Storage Containers

1. Similar in shape to highway transportation containers
2. Fixed facilities may also have large quantity of “material storage containers”
 - a) drums
 - b) boxes
 - c) packages
 - d) tanks
3. Containers may be non-pressure, low pressure, or high pressure
 - a) non-pressure: liquids or gases
 - boxes
 - bottles
 - bags
 - pails
 - drums
 - casks
 - carboys – exclusive hazardous materials container – glass or plastic bottle encased in wood or cardboard – used for corrosive liquids
 - b) low-pressure: contains volatile liquids, solids, and some gases
 - drums
 - storage tanks

OH
77-83

OH
84

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION	
<p>LO-25</p> <div data-bbox="284 285 401 363">OH 85</div> <div data-bbox="284 783 401 861">OH 86</div>		<ul style="list-style-type: none"> • pipelines <p>c) high-pressure: contains gases, liquefied gases, and some liquids</p> <ul style="list-style-type: none"> • liquefied gas cylinders • liquefied compressed spheres • compressed gas cylinders and tubes • pipelines <p>d) ultra-high pressure: contain gases or some liquids</p> <ul style="list-style-type: none"> • tube banks • cylinders • pipelines <p>Discussion Activity # 2: Container Characteristics</p> <p>Have students view the slides and discuss each container's characteristics:</p> <p>Container / package type?</p> <p>Non-pressure, pressure, high pressure, or ultra-high pressure?</p> <p>Solid, liquid, or gas being transported?</p>
<p>LO-3</p> <div data-bbox="284 1430 401 1507">OH 87</div>	<p>Q. Identification Difficulties</p> <ol style="list-style-type: none"> 1. Materials mislabeled or marked wrong 2. Labels/Placards missing 3. Mixed loads with the "Dangerous" placard 4. Shipping papers unavailable or wrong information on them <p>VIII. ROUTES OF EXPOSURE</p> <p>A. Inhalation</p> <ol style="list-style-type: none"> 1. Contact with respiratory tract 	

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<p>LO-24</p> <div data-bbox="284 476 401 554">OH 88</div> <div data-bbox="284 1085 401 1163">OH 89</div> <div data-bbox="284 1505 401 1583">OH 90</div> <div data-bbox="284 1736 401 1814">OH 91</div>	<ol style="list-style-type: none"> 2. Responders should avoid breathing vapors form material or its byproducts <p>B. Ingestion</p> <ol style="list-style-type: none"> 1. Contact with the digestive tract 2. Responders should avoid eating, drinking, smoking, chewing gum, or applying makeup at the scene <p>C. Injection</p> <ol style="list-style-type: none"> 1. Enters through a break in the skin or through injection by a needle 2. Responders should be careful of sharp objects at the scene which may be contaminated with hazardous materials <p>D. Absorption</p> <ol style="list-style-type: none"> 1. Contact with skin, eyes, or other mucus membranes 2. Responders should avoid direct contact with material(s) or their byproducts <p>VIII. SCENE HAZARDS</p> <p>A. Assessment Of Scene Must Take Place</p> <ol style="list-style-type: none"> 1. Information gathered by dispatcher is essential to help responder approach scene safely 2. While on scene, responders need to continually evaluate all hazards, not just hazards created by the materials involved in the incident <ol style="list-style-type: none"> a) heat / frostbite b) radiation c) asphyxiation d) chemical e) etiological / biohazards f) electrical g) falling / moving / exploding objects

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<p>LO-9</p> <div data-bbox="284 674 401 753">OH 92</div> <div data-bbox="284 1047 401 1127">OH 93</div>	<ul style="list-style-type: none"> h) ignition sources <ul style="list-style-type: none"> • flames • cutting and welding operations • heated surfaces • friction • radiated heat • static electricity • electrical and mechanical sparks • spontaneous ignition • lightning • etc. <p>3. Summary</p> <ul style="list-style-type: none"> a) Not all the hazards at a hazardous materials incident are visible b) Responders should be aware of not only all the potential hazards of the materials, but all dangers around them
<p>LO-10</p> <div data-bbox="284 1276 401 1356">OH 94</div>	<p>IX. TERRORISM</p> <p>A. Definition: A violent act or acts dangerous to human life, in violation of the criminal laws of the United States or any segment thereof, in furtherance of political or social objectives. (U.S. Department of Justice)</p> <p>B. Emergency Response Challenges</p> <ul style="list-style-type: none"> 1. Deliberate act <ul style="list-style-type: none"> a) violence b) guns c) armed resistance 2. May involve hazardous materials <ul style="list-style-type: none"> a) anthrax b) Saran gas

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<p>LO-11</p> <p>OH 95</p>	<p>c) Class 1 explosives</p> <p>3. Targeting Responders</p> <p>a) secondary device may be staged outside of initial “Hot Zone” where responders may park or stage</p> <p>4. Potential Targets</p> <p>a) Public assembly</p> <p>b) Public buildings</p> <p>c) Mass transit systems</p> <p>d) Places with high economic impact</p> <p>e) Telecommunications facilities</p> <p>f) Places with historical or symbolic significance</p>
<p>LO-15</p> <p>OH 96</p>	<p>5. Crime scene considerations</p> <p>a) treat scene as crime area</p> <p>b) notify dispatch of suspicion of terrorist act</p> <p>c) make notes of initial observations</p> <p>C. On-Scene Warning Signs</p> <p>1. Sudden onset of mass illness / death</p> <p>a) may or may not be associated with trauma</p> <p>2. Unexplained mass signs / symptoms</p> <p>a) skin irritation</p> <p>b) eye irritation</p> <p>c) airway irritation</p> <p>3. Spot fires</p> <p>4. Unexplained vapor clouds, plumes, etc.</p> <p>5. Unusual odors / tastes</p>
<p>LO-16</p>	<p>D. Self-Protective Measures</p> <p>1. Time, distance, shielding</p> <p>2. Same as considerations as any hazardous materials incident</p>

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
LO-19	<p>E. Incident Management</p> <ol style="list-style-type: none"> 1. Establish command 2. Perimeter control 3. Crime scene considerations – preserve evidence 4. Document the initial observations 5. Communicate the suspicion during notification <p>X. DOT EMERGENCY RESPONSE GUIDEBOOK</p> <p>A. General Points</p> <ol style="list-style-type: none"> 1. Used for initial response only (first 30 minutes of incident) 2. Provides general hazard, health, protective, and response actions 3. Can be used if a placard has a UN Identification number or just a hazard class number 4. Provides national resource phone numbers (Chemtrec, Chemtel, NRC, etc.)
LO-17	<p>B. Limitations</p> <ol style="list-style-type: none"> 1. Only provide limited information on hazardous materials 2. Does not provide enough specific information for an identified hazardous material (guides are generic) <p>C. General Instruction</p> <ol style="list-style-type: none"> 1. White sections in front and back of book provide general information <ol style="list-style-type: none"> a) example of information required on shipping papers (inside front cover) b) example of placard (inside front cover) c) how to use Guidebook during an incident involving “Dangerous Goods” shipment (pg. 1) d) user’s guide (pg.2)

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
LO-17	<ul style="list-style-type: none"> e) Guidebook contents (pgs. 3-4) f) TIH – Toxic by Inhalation Hazard information <ul style="list-style-type: none"> • Hazard Zones A-D (Zone A is more toxic than Zones B, C, or D) (pgs. 4-5) • Isolation and Evacuation Distance information (pg. 5) • Safety precautions (pg. 6) • Who to call for assistance (pg. 7) • Canada’s emergency contact numbers (pgs. 8-9)
LO-17	<ul style="list-style-type: none"> • United States emergency contact numbers (pgs. 10-11) • Mexico’s emergency contact numbers (pg. 12) • Hazard Classification System (pg. 13) • Introduction to Table of Placards (pg 15) • Table of Placards (pgs. 16-17) • Examples of rail car containers and “guides” to use (pg. 18) • Examples of road trailer containers and “guides” to use (pg. 19) • Hazard Identification Codes for intermodal containers (pgs. 20-23) • Information on “protective clothing” use (pgs. 364-365) • Information on “fire and spill control” (pgs. 366-367)
LO-18	<ul style="list-style-type: none"> • General information on criminal / terrorist use of chemical / biological agents (pgs. 368-370) • Glossary (pgs. 371-377)

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
LO-18	<ul style="list-style-type: none"> Emergency contact numbers (inside back cover)
LO-20-21-22	<ol style="list-style-type: none"> Yellow Section <ol style="list-style-type: none"> Uses identification by 4-digit UN ID number In numerical order Provides chemical names Provides guide number to go to Blue Section <ol style="list-style-type: none"> Uses identification by chemical name In alphabetical order Provides 4-digit UN ID number Provides guide number to go to Orange Section <ol style="list-style-type: none"> General information in top orange header Fire / Explosion Hazard Section if listed before Health Hazard, then Fire/Explosion is greatest hazard to responders Health Hazards Section <ul style="list-style-type: none"> if listed before Fire / Explosion Hazards, then Health Hazards is greatest hazard to responders Public Safety Information <ul style="list-style-type: none"> includes isolation distances Protective Clothing considerations Evacuation information Firefighting actions Spill or Leak procedures First Aid considerations Green Section – Table of Initial Isolation and Protective Action Distances <ol style="list-style-type: none"> Refer students back to the Yellow and Blue
LO-6	

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<p>LO-23</p> <div data-bbox="284 285 401 363">OH 102</div> <div data-bbox="284 840 401 917">OH 103</div> <div data-bbox="284 934 401 1012">OH 104</div>	<p>sections and point out the highlighted materials</p> <ul style="list-style-type: none"> b) Considered airborne, inhalation hazards and the green pages show protective action distances if the material is not on fire c) If material(s) are on fire, then use Orange Guides d) Referenced by UN ID number, so if unknown, will have to obtain by chemical name in Blue Section e) Distances are for first 30 minutes of incident f) Explain all columns of this section <p>STUDENT ACTIVITY # 2: IDENTIFICATION</p> <p>Refer students to page of their student manuals. Have them answer the written questions for each slide shown.</p> <p>XI. NOTIFICATION</p> <ul style="list-style-type: none"> A. Done In Accordance With State / Local Requirements B. State Police Emergency Response Officers (ERO) Specifically Requested C. Hazardous Materials Incident Notification Information Checklist <ul style="list-style-type: none"> 1. Initial Responders and dispatchers need to work together to obtain needed information 2. Information should be passed along to other emergency responders 3. Helps make sure needed resources are dispatched in timely manner 4. Other response agencies need to be aware of conditions at scene <p>XII. ISOLATING THE SCENE AND PROTECTING THE PUBLIC</p> <ul style="list-style-type: none"> A. First Responder Responsibilities In Performing Initial

OUTLINE AND PRESENTATION

Scene Control

B. Basic Scene Set-Up

1. Setting up initial isolation zones (determining hazard area; using information in ERG)
2. Isolating the hazard area
3. Determining any downwind protective action distances for those populations who may be affected by the hazard in the near future

C. Zones

1. Hot Zone
 - a) Initial isolation area established by first responder
 - b) Most dangerous area – hazards are present
 - c) Anyone within zone must be protected from hazards
 - d) Anyone or anything in zone must be considered contaminated
 - e) Victims, responders, or equipment in zone may have to be decontaminated
 - f) Size is determined by the material(s) hazards
 - g) First responder is not trained or equipped to be in this zone
 - h) First responders have involvement in setting up this initial isolation area or evacuating downwind protective action distances to prevent the spread of contaminants
- i) Evacuation
 - Movement of people from affected area(s)
 - Should be done first with those outside and in

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
OH 106	<p>view of the incident</p> <ul style="list-style-type: none"> • Evacuees should be directed to evacuate by a designed route upwind or crosswind to the edge of the Hot Zone, far enough away so not to be affected if wind shifts • With additional resources, evacuation of downwind distances can be done based on assessment or by following guidelines in ERG • Evacuees may need to be decontaminated
OH 107	<p>j) Shelter in place</p> <ul style="list-style-type: none"> • Utilized when evacuation is not possible or when evacuation would put public at greater risk • May not be best option if threat of fire or explosion exist, event is long-term, or the building they are in cannot be sealed properly <p>2. Cold Zone</p> <ol style="list-style-type: none"> a) Area outside the Hot Zone b) Zone where First Responders are trained and equipped to be c) Should have inner and outer perimeter to prevent outside people from entering d) Safe zone – no hazards should exist e) Incident Command Post and Staging Areas should be located in this zone (uphill, upstream, and/or upwind of the incident)
OH 108	<p>3. Warm Zone</p> <ol style="list-style-type: none"> a) If proper isolation is not done then contamination will occur

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<p>LO-8</p> <div data-bbox="284 552 401 630">OH 109</div> <div data-bbox="284 875 401 953">OH 110</div> <div data-bbox="284 1199 401 1276">OH 111</div> <div data-bbox="284 1428 401 1505">OH 112</div> <div data-bbox="284 1656 401 1734">OH 113</div>	<ul style="list-style-type: none"> • Direct contamination – direct contact with the material or it's byproducts in the Hot Zone • Cross contamination – contact with someone or something which has already been contaminated <p>b) Warm Zone established to provide location for decontamination</p> <ul style="list-style-type: none"> • Full (multi-station) Decon – requires use of specialized equipment and training, so is normally a Technician level function • Basic / Emergency Decon – performed by first responders trained to Operations level or higher – only performed when an identified (known hazards) material poses a threat of injury or death to a victim and can be carried out with equipment normally carried on a fire engine <p>c) Size of Warm Zone is dependent upon length of the contamination reduction corridor</p> <p>d) Only properly trained and equipped personnel should be allowed into Warm Zone when established</p> <p>4. Summary</p> <p>a) Control at a scene is essential to ensure the protection of the public and other responders</p> <p>b) The First Responder will have a role in setting up an initial isolation zone using resources available</p> <p>c) The First Responder may be involved in the initial evacuation or sheltering in place actions</p> <p>d) The First Responder has a large impact on the</p>

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<p>LO-7</p> <div data-bbox="284 1239 401 1316" data-label="Text"> <div>OH</div> <div>114</div> </div>	<p>prevention of direct and cross contamination</p> <p>XIII. NIIMS INCIDENT COMMAND SYSTEM</p> <ul style="list-style-type: none"> A. National Interagency Incident Management System B. OSHA 1910.120 Requirement of “Structured” Incident Command System C. NIIMS Mandated By Governor’s Decree <ul style="list-style-type: none"> 1. State employees must follow 2. Local agencies may / may not follow D. HMER Plan Requires Incident Command System <ul style="list-style-type: none"> 1. State Police ERO is mandated to be Incident Commander when he/she arrives on scene 2. First Responder on scene will assume responsibility of Incident Command until the arrival of more qualified person or the ERO E. Overview of Incident Command <ul style="list-style-type: none"> 1. Incident Action Plan 2. Functional areas 3. Elements of ICS F. Initiating an Incident Action Plan (IAP) <ul style="list-style-type: none"> 1. All incidents require a plan 2. All responders must clearly know what is expected of them 3. Assessment <ul style="list-style-type: none"> a) Done prior to and on arrival at scene 4. Objectives <ul style="list-style-type: none"> a) After assessment of scene, decide what must be done <ul style="list-style-type: none"> • Isolation of the area • Initial downwind evacuation 5. Strategies

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
<div data-bbox="284 667 401 743">OH 115</div> <div data-bbox="284 934 401 1010">OH 116</div>	<div data-bbox="738 237 1497 554"> <ul style="list-style-type: none"> a) Methods used to meet the objectives <ul style="list-style-type: none"> • Close both ends of the road ½ mile from the incident • Use barrier tape to establish isolation area • Evacuate houses closes to scene and expand from there when possible </div> <div data-bbox="667 573 841 606">6. Tactics</div> <div data-bbox="738 627 1507 1054"> <ul style="list-style-type: none"> a) Who will perform functions required in strategies? <ul style="list-style-type: none"> • Sheriff's Unit #256 will close end of road ½ mile south of incident • Sheriff's Unit #258 will close end of road ½ mile north of incident • State Police Unit #123 will go door-to-door at residences on North end of incident to notify occupants of evacuation or sheltering-in-place </div> <div data-bbox="573 1073 1027 1106">G. Functional Areas of ICS</div> <div data-bbox="667 1127 886 1161">1. Command</div> <div data-bbox="738 1182 1435 1274"> <ul style="list-style-type: none"> a) Person in charge b) Sets priorities and objectives for the incident </div> <div data-bbox="667 1293 898 1329">2. Operations</div> <div data-bbox="738 1348 1370 1440"> <ul style="list-style-type: none"> a) Performs functions required to meet the objectives of the incident </div> <div data-bbox="667 1457 865 1493">3. Logistics</div> <div data-bbox="738 1514 1455 1606"> <ul style="list-style-type: none"> a) Provides personnel and equipment needed to fulfill the requirements of the objectives </div> <div data-bbox="667 1787 1083 1820">4. Administration / Finance</div> <div data-bbox="738 1841 1255 1877"> <ul style="list-style-type: none"> a) Provides accounting of incident </div> <div data-bbox="667 1896 865 1932">5. Planning</div>

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
OH 117	<ul style="list-style-type: none"> a) Performs long-range planning for the incident b) Provides documentation of the incident c) Maintains status of all personnel / equipment involved in the incident Maintains cost of equipment / personnel <p>H. General Staff Positions</p> <ul style="list-style-type: none"> 1. Administration / Finance Section Chief 2. Logistics Section Chief 3. Operations Section Chief 4. Planning Section Chief
OH 118	<p>I. Command Staff Positions</p> <ul style="list-style-type: none"> 1. Safety Officer <ul style="list-style-type: none"> a) Ensures safety of all personnel working at incident b) Can stop any tactical function that he/she feels is unsafe c) Answers directly to Incident Commander d) Only 1 "Incident" Safety Officer
OH 119	<ul style="list-style-type: none"> 2. Information Officer <ul style="list-style-type: none"> a) Provides information to media, general public, and to other agencies involved in incident b) Only 1 "Incident" Information Officer c) Answers directly to Incident Commander
	<ul style="list-style-type: none"> 3. Liaison Officer <ul style="list-style-type: none"> a) Works with agency representatives from other agencies involved in the incident

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
OH 120	<ul style="list-style-type: none"> b) Only 1 “Incident” Liaison Officer c) Answers directly to Incident Commander
	<p>J. Personnel Accountability</p> <ul style="list-style-type: none"> 1. Responders need to check-in with Command (no free-lancing) 2. Location and actions of responders are known by the person managing them 3. A Personnel Accountability Report (PAR) should be taken every 15 to 20 minutes
OH 121	
OH 122-123	<p>K. Span of Control</p> <ul style="list-style-type: none"> 1. Number of people or functions with can be adequately managed by one person 2. Range is from 3 to 7 <ul style="list-style-type: none"> a) Any less than 3 means more people in charge than doing the work b) Any more than 7 is a safety concern 3. Optimum number is 5
OH 124	
	<p>L. Organizational Flexibility</p> <ul style="list-style-type: none"> 1. Structure can expand or contract as incident conditions change 2. Use only what is needed <ul style="list-style-type: none"> a) Cost effective b) Efficient
OH 125	<p>M. Clear Communications</p> <ul style="list-style-type: none"> 1. Communications between all personnel involved in incident needs to be clear, especially when developing

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
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the IAP

2. **NO 10 – CODES**

- a) Clear text only
- b) Numerous agencies with numerous 10-codes working at an incident can create confusion

N. Transfer of Command

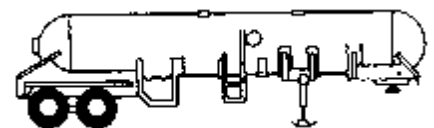
- 1. Takes place when a responder with equal or higher level of training arrives on scene, or when a State Police ERO arrives on scene
- 2. First Responder may then be assigned other responsibilities depending on his/her normal duties
- 3. Initial Response Chart – See slide

O. Summary

- 1. There must be a definite plan of action
- 2. Plan must clearly indicate who is going to carry out specific tasks
- 3. ICS must be established and someone must be in Command

STUDENT ACTIVITY #3: PUTTING IT ALL TOGETHER

Break students into groups of no more than 3 students to a group and give each group an Activity #3 Packet (not in student manual). This packet includes a written scenario, with a sketch of the incident, a Hazardous Materials Incident Notification Checklist with some appropriate information included on it. A blank ICS organizational chart and a list of questions is also included in the packet. The students are required to answer the questions, fill in their basic Incident Command Structure Emergency Response Guidebook. The minutes. At the end of the time limit take up the packets and check to



LO-1

